AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method for avoiding inter-layer inter-symbol interference, comprising:

using a diagonally layered multi-antenna transmission utilizing a number of multiple layers, each layer including a different sequence of symbols;

dividing the different sequence of symbols of each layer into a first number of multiple sub-sequences, the first number being a multiple of the number of multiple layers, where the multiple sub-sequences in each of the layers include non-identical information content;

associating the multiple sub-sequences to a second number of transmit antennas such that all antennas transmit an equal number of sub-sequences of each layer; and

inserting known symbols between each of the multiple sub-sequences to each transmit antenna, a number of known symbols being at least as many as a number of symbol spaced channel taps minus one seen by a receiver to avoid inter-layer inter-symbol interference.

2. (Previously Presented) The method according to claim 1, further comprising: inserting the number of known symbols at the border between the multiple sub-sequences of the different layers with at least as many as an expected channel memory for a channel observed by a receiver.

3. (Currently Amended) The method according to claim 2, further comprising:

_____inserting the known symbols at the borders between the different layers, and ~~also~~

using inserted known symbols ~~also~~ for ~~purposes such as for instance~~ channel estimation or similar purposes.

4. (Currently Amended) The method according to claim 3, ~~further comprising: letting~~ wherein the first number of multiple sub-sequences of the layers ~~having an~~ are equal in size.

5. (Currently Amended) The method according to claim 4, ~~further comprising: making~~ wherein the known symbols ~~to~~ constitute a training sequence.

6. (Currently Amended) The method according to claim 5, wherein in a system having a first and a second transmit antenna, and a burst structure containing a training sequence in the middle of a burst and with data fields to either side of the training sequence, the method further comprises:

transmitting a layer one in a left data field and a layer two in a right data field from the first antenna, while transmitting from the second antenna the layer two in the left data field and the layer one in the right data field and from each antenna separating the two layers by the known training sequence to thereby avoid inter-layer inter-symbol interference.

7. (Currently Amended) The method according to claim 1, further comprising:

adaptively changing a transmitter algorithm used between layering over one or several antennas depending on a modulation scheme~~,~~ and/or a code rate of an outer channel code.

8. Canceled.

9. (Currently Amended) The method according to claim 1, further comprising:

dividing a transmit antenna array into sub-sets of transmit antennas, each sub-set containing an arbitrary number of transmit antennas;

dividing the layers into sub-sets of layers, each sub-set of layers corresponding to a sub-set of transmit antennas; and

diagonally layering the layers within a sub-set, while not permitting layering across different transmit antenna sub-sets.

10. (Currently Amended) The method according to claim 1, further comprising:

setting up a transmit antenna arrangement constituting an even number of individual antennas, the transmit antenna ~~array~~ arrangement being divided into sub-sets of two individual antennas, whereby the layers within a sub-set data are diagonally layered, while not permitting layering across different antenna sub-sets.

11. (Currently Amended) A system for avoiding inter-layer inter-symbol interference, comprising:

a diagonally layered multi-antenna transmission apparatus including a number of multiple layers, each layer including a different sequence of symbols;

means for dividing the different sequence of symbols of each layer into a first number of multiple sub-sequences of layers, the first number being a multiple of the number of multiple layers, where the multiple sub-sequences in each of the layers include non-identical information content;

means for associating the multiple sub-sequences of layers with a second number of transmit antennas such that all antennas are configured to transmit an equal number of multiple sub-sequences of each layer;

means for inserting known symbols at the borders between the multiple sub-sequences to each transmit antenna, a number of known symbols being at least as many as a number of symbol-spaced channel taps minus one as seen by a receiver to avoid inter-symbol interference between the layers.

12. (Previously Presented) The system according to claim 11, wherein the number of known symbols inserted at the border between the different layers is at least as many as an expected channel memory for a channel observed by a receiver.

13. (Previously Presented) The system according to claim 12, wherein the known symbols inserted at the borders between the different layers can also be used for channel estimation or other desired purposes.

14. (Previously Presented) The system according to claim 13, wherein the first number of parts of layers have an equal size.

15. (Previously Presented) The system according to claim 14, wherein the known symbols constitute a training sequence.

16. (Previously Presented) The system according to claim 15, wherein for a system having a first and a second transmit antenna, and a burst structure containing a training sequence in the middle of a burst and with data fields to either side of the training sequence, a layer one is transmitted in a left data field and a layer two is transmitted in a right data field of the first antenna, while for the second antenna the layer two is transmitted in the left data field and the layer one is transmitted in the right data field thereby separating the two layers by the known training sequence to thereby avoid inter-layer inter-symbol interference.

17. (Previously Presented) The system according to claim 11, further comprising a transmitter configured to adaptively change between layering over one or several antennas depending on a modulation scheme and/or a code rate of an outer channel code.

18. Canceled.

19. (Previously Presented) The system according to claim 11, further comprising:

means for dividing a transmit antenna array into sub-sets of transmit antennas, each sub-set containing an arbitrary number of transmit antennas, where the layers are divided into sub-sets of layers, each sub-set of layers corresponding to a sub-set of transmit antennas, and the layers within a sub-set are diagonally layered while not permitting layering across different transmit antenna sub-sets.

20. (Previously Presented) The system according to claim 11, further comprising a transmit antenna arrangement including an even number of individual antennas, the transmit antenna arrangement being divided into sub-sets of two individual antennas, where the layers within a sub-set data are diagonally layered, while there is no layering across different antenna sub-sets.

21. (Previously Presented) The method according to claim 1, wherein each sequence of symbols is divided by separating the symbols into the first number of multiple sub-sequences and introducing the known symbols at the border between the multiple sub-sequences of the different layers.

22. (Currently Amended) The system according to claim ~~1~~11, wherein the means for dividing is configured to divide each sequence of symbols by separating the symbols into the first number of multiple sub-sequences and introducing the known symbols at the border between the multiple sub-sequences of the different layers.

23. (Currently Amended) Apparatus for avoiding inter-layer inter-symbol interference, comprising:

a diagonally-layered, multi-antenna transmitter including a number of multiple layers, each layer including a different sequence of symbols,

wherein the different sequence of symbols corresponding to each layer is divided into a first number of multiple sub-sequences of layers, the first number of multiple sub-sequences of layers being a multiple of the number of multiple layers, where the multiple sub-sequences in each of the layers include non-identical information content,

electronic circuitry configured to:

associate the multiple sub-sequences of layers to a second number of transmit antennas such that all antennas transmit an equal number of multiple sub-sequences of each layer, and

insert known symbols between ~~the parts~~ each of the multiple sub-sequences to each transmit antenna, a number of known symbols being at least as many as a number of symbol spaced channel taps minus one seen by a receiver to avoid inter-layer inter-symbol interference.

24. (Previously Presented) The apparatus according to claim 23, wherein the electronic circuitry is configured to insert the number of known symbols at a border between the multiple sub-sequences of the different layers.

25. (Previously Presented) The apparatus according to claim 24, wherein the electronic circuitry is configured to insert the known symbols at the borders between the different layers.

26. (Previously Presented) The apparatus according to claim 23, wherein the known symbols constitute a training sequence.

27. (Previously Presented) The apparatus according to claim 26, wherein the diagonally-layered, multi-antenna transmitter includes a first antenna and a second transmit antenna,

wherein a data transmission format includes a burst structure having a training sequence in the middle of a burst and with data fields to either side of the training sequence,

wherein the diagonally-layered, multi-antenna transmitter is configured to transmit a first layer in a left data field and a second layer in a right data field from the first antenna and to transmit from the second antenna the second layer in the left data field and the first layer in the right data field such that the first and second layers transmitted from each antenna are separated by the known training sequence to avoid inter-layer inter-symbol interference.

28. (Previously Presented) The apparatus according to claim 23, wherein the electronic circuitry is configured to:

divide a transmit antenna array into sub-sets of transmit antennas, each sub-set containing a number of transmit antennas;

divide the layers into sub-sets of layers, each sub-set of layers corresponding to a sub-set of transmit antennas; and

diagonally layer the layers within a sub-set without layering across different transmit antenna sub-sets.

29. (Previously Presented) The apparatus according to claim 23, wherein the electronic circuitry is configured to divide each sequence of symbols by separating the symbols into the first number of multiple sub-sequences of layers and introducing the known symbols at the border between the multiple sub-sequences of the different layers.